WEIGHT ADJUSTABLE RODENT TRAP

Background of the Invention

This invention relates generally to rodent traps and, more particularly, to a rodent trap having a tripping assembly that is adjustable for optimizing success in trapping rodents of various weights.

A difficulty in repeatedly catching mice or other rodents is that the rodents eventually learn how to avoid the trap or are deterred at the sight of another rodent that has already been trapped. Various types of traps have been proposed throughout the years for catching mice and other rodents. Although assumably effective for their intended purposes, the existing devices for trapping rodents do not successfully inhibit rodents from learning to avoid the trap or they inhibit other rodents from being trapped once one rodent has been caught. Further, existing devices are not adjustable for trapping rodents of various weights.

Therefore, it is desirable to have a rodent trap that is adjustable for trapping rodents of various weights. In other words, it is desirable that the stability of a trip board can be adjusted according to the weights of the rodents intended to be trapped such that the trip board is not released until the rodent believes it is safe to proceed. Further, it is desirable to have a rodent trap which traps rodents in a containment area separated from an entry and bait area such that entering rodents are not deterred at the sight of already trapped rodents.

Summary of the Invention

A weight adjustable rodent trap according to the present invention includes a housing having a generally box-shaped configuration having a ramp that extends substantially between the top and bottom walls. The housing defines an interior space and the ramp is situated to define an entry opening adjacent the top wall such that a rodent may

enter the interior space after ascending the ramp. A platform is mounted within the housing and extends from the entry opening inwardly into the interior space. A trip board is pivotally mounted within the housing and is rotatable between a set configuration in which a portion thereof rests upon the platform and a tripped configuration that is rotated relative to the platform. In the tripped configuration, the trip board serves as a trap door so as to deposit a rodent into a containment area beneath the trip board.

The platform and one portion of the trip board include a complementary metallic element and magnet, respectively. At the set configuration, the metallic element and magnet are drawn toward one another which allows the trip board to maintain its position even when a rodent proceeds to an opposed, free standing portion of the trip board – that is, until the weight of the rodent overcomes the magnetic attraction. At that point, the trip board will rotate to deposit the rodent into the containment area. The center of gravity of the trip board is positioned relative to its pivot point such that the trip board returns to the set configuration after the rodent is deposited.

Therefore, a general object of this invention is to provide a rodent trap which for repeatedly trapping rodents without having to be reset after each catch.

Another object of this invention is to provide a rodent trap, as aforesaid, which coaxes a rodent to proceed along a trip board beyond a "point of no return" before depositing the rodent into a containment area.

Still another object of this invention is to provide a rodent trap, as aforesaid, having a trip board that is magnetically held in place until a rodent is at a predetermined trip location on the trip board.

Yet another object of this invention is to provide a rodent trap, as aforesaid, in which the positions of a magnet and metallic element for holding the trip board in a set configuration are adjustable such that the weight needed to trip the trip board is selectable.

A further object of this invention is to provide a rodent trap, as aforesaid, in which a rodent containment area is separated from a rodent entry and trapping area.

A still further object of this invention is to provide a rodent trap, as aforesaid, having a removable bait container.

Another object of this invention is to provide a rodent trap, as aforesaid, which includes a plurality of pivotal prongs that prevent a rodent from reversing course after first proceeding along the trip board.

Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings, wherein is set forth by way of illustration and example, an embodiment of this invention.

Brief Description of the Drawings

Fig. 1 is a perspective view of a rodent trap according to a preferred embodiment of the present invention;

Fig. 2 is a perspective view from another angle of the rodent trap as in Fig. 1 with a front wall removed;

Fig. 3a is a front view of the rodent trap as in Fig. 2 with a trip board in a set configuration and utilizing glue strip containment means;

Fig. 3b is a front view of the rodent trap as in Fig. 3a with the trip board in a tripped configuration;

Fig. 3c is an isolated view on an enlarged scale of a portion of the trip board and platform shown in Fig. 3b;

Fig. 3d is an exploded view of the illustration shown in Fig. 3c showing the magnet and magnetic element removed from their nested positions;

Fig. 4a is another perspective view of the rodent trap as in Fig. 2 utilizing a container as the containment means;

Fig. 4b is a perspective view of the rodent trap as in Fig. 4a utilizing glue strips as the containment means;

Fig. 5a is another perspective view of the rodent trap with a ramp portion in an open configuration; and

Fig. 5b is a perspective view of the rodent trap with the ramp portion in a closed configuration.

Description of the Preferred Embodiment

A weight adjustable rodent trap 10 according to a preferred embodiment of the present invention will now be described in detail with reference to Figs. 1 through 5b of the accompanying drawings. The rodent trap 10 includes a housing having a generally upstanding box-shaped configuration (Fig. 1) although other configurations utilizing the yet to be described features would also be suitable. More particularly, the housing includes top 14 and bottom 16 walls with front 17 and back 19 walls extending therebetween so as to substantially enclose the housing and define an interior space. The front wall 17 is preferably constructed of a transparent material to enable a user to view the interior space. A handle 12 may be mounted atop the top wall 14 for carrying the rodent trap 10 (Fig. 1).

Further, a ramp 20 acts as one side wall and extends substantially between the top 14 and bottom 16 walls at an oblique angle such that rodents may ascend the ramp 20 (Fig. 2). The ramp 20 is situated, however, so as to define an entry opening 26 adjacent the top wall 14 of the housing so as to enable a rodent to enter into the interior space of the housing after having ascended the ramp 20. The ramp 20 may be covered with a layer of carpet 24 or imprinted with a heavy texture to enhance a rodent's ability to ascend the ramp 20 (Fig. 2). The ramp 20 essentially serves as a first side wall. Another side wall 18 extends between the top 14 and bottom 16 walls and is positioned at an opposing side of the housing (Fig. 1) and will be described in more detail later.

A platform 28 is mounted within the interior space of the housing and extends inwardly from the entry opening 26. Preferably, the platform 28 is connected to an upper edge of the ramp 20 and extends in a generally level horizontal plane less than half the width of the housing between the ramp 20 and second side wall 18 (Fig. 2).

A trip board 36 is pivotally mounted within the interior space of the housing with a pivot pin 38 or similar fastener (Fig. 2). The trip board 36 is rotatable about the pivot pin

38 between a set configuration (Fig. 3a) and a tripped configuration (Fig. 3b). The trip board 36 is positioned slightly above the platform 28 but is substantially longer than the platform 28. The trip board 36 includes a first portion 40 that rests upon the platform 28 at the set configuration and includes a second portion 42 that extends inwardly into the interior space beyond a distal end 30 of the platform 28. The pivot pin 38 is positioned adjacent the distal end 30 of the platform 28 such that the second portion 42 of the trip board 36 is rotated downwardly when the trip board is pivoted to the tripped configuration (Fig. 3b).

An upper surface of the platform defines a plurality of platform grooves 32, each platform groove 32 extending substantially between front 17 and back 19 walls of the housing. The plurality of platform grooves 32 are spaced apart along the longitudinal extent of the platform 28. A metallic element 34 having a configuration complementary to a configuration of a platform groove 32, such as a nail or the like, may be removably nested in a selected platform groove 32 (Fig. 3c). The metallic element 34 may be selectively positioned in a desired platform groove 32 (Fig. 3d) as will be further described later. Of course, it would also be suitable for the metallic element 34 to have a singular position upon the platform 28.

A lower surface of the first portion 40 of the trip board 36 defines a plurality of trip board grooves 44 positioned to correspond to the placement of the platform grooves 32 (Fig. 3c). A magnet 46 having a configuration complementary to a configuration of the trip board grooves 44 may be nested in a selected trip board groove 44 (Figs. 3c and 3d). Accordingly, the magnet 46 and metallic element 34 are magnetically attracted to one another at the set configuration so as to bias the trip board to the set configuration even when weight is applied to the second portion 42 of the trip board 36, i.e. the weight of a rodent. In addition, the center of gravity of the trip board 36 is positioned such that the trip board 36

returns to the set configuration after the weight of a rodent is removed from the second portion 42.

The conditions causing a release of the trip board 36 may be adjusted by changing the placement of the magnet 46 and metallic element 34. More particularly, the particular grooves into which the metallic element 34 and magnet 46 are placed will change the amount of weight that can be placed upon the second portion 42 of the trip board 36 before breaking the attraction between the metallic element 34 and magnet 46. Specifically, the further the magnet 46 and metallic element 34 are displaced from the pivot point, i.e. closer to the entry opening 26, the more weight can be supported upon the second portion 42 of the trip board before it is rotated to the tripped configuration. Another means of adjusting the release of the trip board is to utilize a stronger magnet or even multiple magnets. Still another way to increase the hold between the platform 28 and trip board 36 is to utilize magnets on both locations rather than just magnet and metallic element. Preferably, a magnetic strip is used as the magnet although other magnets, multiple magnets, or self-adhesive magnets would also work. It is understood that the front wall 17 may be completely removed by a user for access to the trip board 36, platform 28, and release components.

As will be described more fully below, a rodent will be deposited into a containment area when the trip board 36 is caused to move to the tripped configuration by the rodent's weight. Preferably, the containment area is a container 48 that is positioned within the interior space of the housing and rests upon the bottom wall 16 (Fig. 2). The container 48 is preferably of a size extending substantially between the ramp 20 and second side wall 18 so as to have a capacity to hold multiple rodents. As shown particularly in Fig. 4b, glue pads 50 may used as an alternative to a container 48 as a means for containing deposited rodents. Multiple options exist for disposing of trapped rodents. Deposited rodents could be set free at

a desired location, the entire trap could be submerged in water, or the container 48 itself may be filled with water or antifreeze so as to drown the rodents as they are caught.

Access is provided to the interior space of the rodent trap 10 so that trapped rodents may be periodically removed from the containment area. More particularly, a portion 22 of the ramp 20 is pivotally coupled to the bottom wall 16 with a hinge, pivot pin, or the like and is movable between open and closed configurations (Figs. 5a and 5b). However, it is important to regulate access to the interior of the rodent trap 10, particularly if the container 48 is filled with antifreeze or similar liquid. In this regard, the movable ramp portion 22 is secured to the housing front wall 17 with a pin and padlock assembly 66. Specifically, a pin may be extended through the front 17 and back 19 walls and a pair of flanges on the ramp portion 22 and selectively secured with a lock (Fig. 5a).

A bait container 52 is attached to the inner surface of a removable panel 54 of the housing second side wall 18 (Fig. 2). The removable panel 54 is removably coupled to the housing second side wall 18 with thumb screws 56 or the like for quick and easy access to the bait container 52 (Fig. 1). The bait container 52 may contain a plurality of holes for allowing the scent of the bait to permeate the container. In addition, the top wall 14, second side wall 18, and other walls may also include holes 58 for allowing the scent to escape and lure rodents to the trap.

Another aspect of this invention is a plurality of probes 60 that are pivotally mounted within the interior space of the housing above the trip board 36 (Fig. 2). Each of the probes includes a generally arcuate configuration with a relatively sharp tip. The plurality of probes 60 is rotatably movable as a singular unit between a generally downwardly directed configuration and a rotated configuration in which the tips are directed away from the entry opening. The probes 60 are mounted with a spring hinge 62 so as to be biased toward the downward configuration although an unbiased configuration would also work.. In the

downward configuration (Fig. 2), the tips are slightly displaced from the trip board 36 so as to encourage a rodent to attempt to squeeze under them while pursuing the bait. As the rodent moves forward along the second portion 42 of the trip board 36, the probes 60 are rotated away from the entry opening 26. However, the tips of the biased probes will dig in to the rodent if the rodent attempts to reverse course and escape, thus forcing the rodent to continue along the second portion 42. Eventually, of course, the trip board 36 will release and deposit the rodent into the containment area. The probes 60 are mounted adjacent the pivot point of the trip board 36 so as to engage a rodent as it travels onto the second portion 42 of the trip board 36. A probe limit pin 64 extends between the front 17 and back 19 walls of the housing adjacent the plurality of probes 60. The limit pin 64 acts as a stop member and is situated to prevent the plurality of probes from being rotated toward the entry opening 26 beyond the downward configuration.

In use, a rodent such as a mouse is lured to the rodent trap 10 by the scent of bait in the bait container 52. The rodent is able to ascend the carpet-covered ramp 20 and enter the housing through the entry opening 26. Upon entering, the rodent is positioned upon the first portion 40 of the trip board 36 which rests upon the platform 28 in a set configuration. Further lured by the scent, the rodent may proceed along the second portion 42 of the trip board 36. In an embodiment utilizing the plurality of probes 60, the probes are pivoted as the rodent attempts to squeeze thereunder to obtain the bait. The probes 60 are configured to prod the rodent in a forward direction should the rodent attempt to reverse course. When the rodent proceeds a sufficient distance along the second portion 42, the weight thereof overcomes the attraction between the magnet 46 and metallic element 34 such that the trip board 36 is released and the rodent is deposited into the containment area. Periodically, rodents trapped in this manner may be removed through the movable ramp portion 22.

Accordingly, it can be seen that the rodent trap described herein is able to trap multiple rodents in that the rodents are unable to learn to avoid the trap and are not deterred from being trapped by previously caught rodents. In addition, the present invention is adjustable for the efficient capture of rodents of different sizes and weights.

It is understood that while certain forms of this invention have been illustrated and described, it is not limited thereto except insofar as such limitations are included in the following claims and allowable functional equivalents thereof.